

# Project Prioritization and Funding: Stakeholder Meeting #3



**City of Baltimore  
Department of Public Works**

**August 2014**

# MS4 Recap / Comments



# MS4 Recap / Comments

On December 27, 2013, The Maryland Department of the Environment (MDE) reissued a National Pollutant Discharge Elimination System (NPDES) stormwater permit to the City of Baltimore – also known as the Municipal Separated Storm Sewer System (MS4) permit. This permit lasts for 5 years.

In order to reduce contaminated stormwater runoff and improve water quality, Baltimore's permit requires that the City develop restoration plans by the end of 2014 to treat and/or reduce 20% of the City's impervious surface area; approximately 4,675 acres – the equivalent of 3,500 football fields!

Comments from the previous meeting (full account of comments can be found at [www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org)):

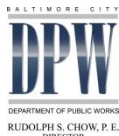
- How is street sweeping being paid?
- What properties are counted within the MS4 plan? What about industries that have their own MS4s, will their stormwater actions impact the City's ability to meet the MS4?
- Will practices that homeowners install be included in the MS4 restoration goal?
- Why is stream restoration as 60%? Haven't we been doing stream restoration?
- How will projects be selected? What criteria will be used?
- Internal city processes and agencies need to work together so that these efforts work seamlessly.
- Public education is needed, and not just in elementary schools.
- Attendees liked the idea of providing technical assistance for larger private stormwater efforts and guidance and free materials for smaller community and homeowner projects; rebates, training, and technical assistance.
- For larger projects an incentive should be streamlining the permitting process.
- There was general discussion of the potential for job stimulus and creation.
- MS4 should complement other plans.
- Projects should not only be visible but show sustainable improvement.



# 6 Pillars of Practical Watershed Planning

1. Plan for more projects than you need.
2. Plan for resources that will affect funding needs.
3. Plan to maintain.
4. Plan to be a part of a bigger picture.
5. Plan for effective public participation.
6. Plan to adapt.

\* the items highlighted in **red** are the focus of this presentation



# 5 Years: 20% Restoration



## Projects

- Large Stormwater BMPS
- Stream Restoration Projects
- Urban ESD Projects
- Impervious area / Greening Projects
- Debris Collection within Public System

## Programs

- Increased street sweeping
- Preventative inlet cleaning
- Illicit Discharge Detection and Elimination Program
- Erosion and Sediment Control Enforcement
- Education / Outreach

## Partnerships

- MD Stormwater Remediation Fee Credit Program
- Private Development
- Incentives

# Stormwater BMPs

## Traditional BMPs

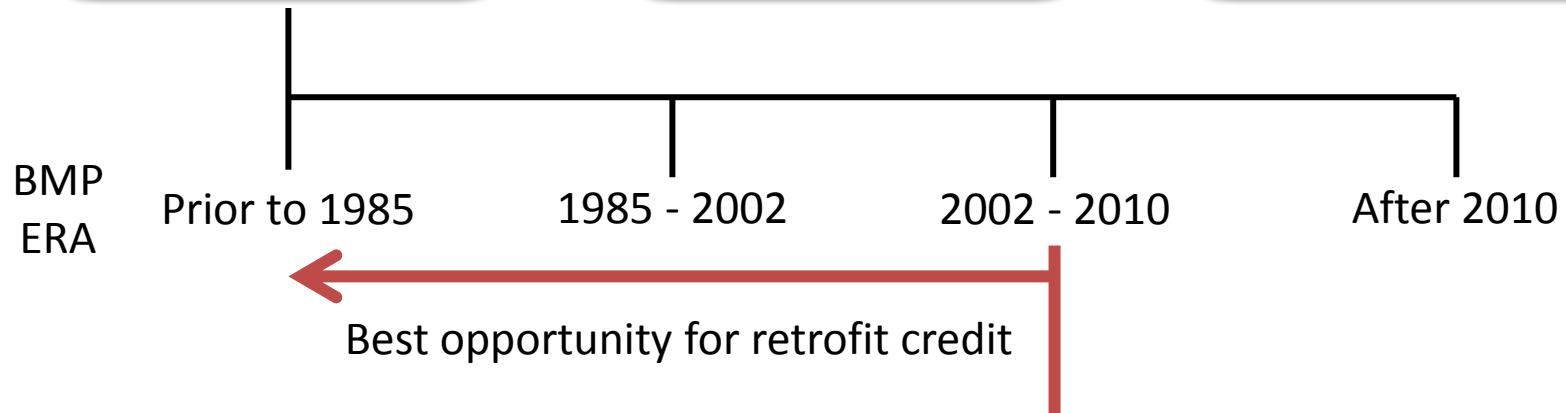
Ponds  
Wetlands  
Infiltration  
Sand filters  
Swales

## ESD Practices

Green roofs  
Permeable paving  
Disconnected runoff  
Rainwater harvest  
Micro-bioretenion  
Enhanced filters

## Alternative BMPs

Stream Restoration  
Shoreline Stabilization  
Tree Planting  
Impervious removal  
Mech. Sweeping  
Inlet Cleaning



# Projects / Programs / Partnerships

	(Projected)	Imp. Area
Restoring stream banks and stabilize failing outfalls	2,840 acres*	60%
Installing ponds, bioretention, and structural filtration practices	250 acres	10%
Retrofitting existing stormwater ponds	150 acres	
Installing micro-practices and green roofs	55 acres	
Creating new green spaces from vacant lots and schools	30 acres	
Planting street trees / reforestation	150 acres	3%
Expanded City-wide mechanical street sweeping	440 acres	10%
Preventive cleaning of catch basins and debris collectors	45 acres	
Illicit Discharge Detection and Elimination (IDDE) program	250 acres*	7%
Erosion and sediment control enforcement	50 acres*	
Public Education	20 acres*	
Development Requirements	180 acres	8%
Voluntary practices & SWM Fee Credit Practices	215 acres	
<b>TOTAL</b>	<b>4,675 acres</b>	



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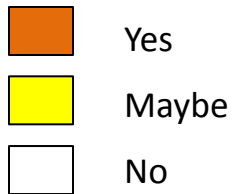


# Project Prioritization

- Location
- Benefit
  - Primary: environmental
  - Secondary: social and economic
- Cost:
  - Effectiveness vs. benefit
  - Funding source / responsible party
  - Design / construction / maintenance costs
- Schedule



# Benefits of Stormwater Management



	Pollutant Reduction	Community Engagement	Job Creation	Habitat Restoration	Reduced Flooding	Reduce Heat Island Effect	Neighborhood Enhancement	Traffic Calming	Recreation / Open Space	Public-Private Partnership / Funding Diversity
Stream Restoration	Yes	Maybe	Yes	Yes	Yes	No	Maybe	No	Maybe	Maybe
Tree Planting	Yes	Yes	No	Yes	Maybe	Yes	Yes	Yes	No	Yes
Using vacant land for sw management	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes
Removing impervious surfaces	Maybe	Maybe	Yes	Maybe	Yes	Yes	Yes	No	Yes	Yes
Micro-bioretentation and rain gardens - public space	Yes	Maybe	Yes	Yes	Yes	Maybe	Yes	Yes	Maybe	Maybe
Micro-bioretentation and rain gardens - private	Yes	Yes	Yes	Yes	Maybe	Maybe	Yes	No	No	Yes
Green Roofs	Maybe	No	Yes	Yes	Yes	Yes	No	No	No	Yes
Permeable Paving	Maybe	No	Yes	No	Maybe	Maybe	No	No	No	Yes
Street Sweeping	Yes	No	Maybe	No	No	No	Yes	No	No	No
Inlet Cleaning	Yes	Maybe	Maybe	No	Yes	No	Yes	No	No	Yes
Illicit Discharge Detection and Elimination	Yes	No	No	No	No	No	No	No	No	No
Public Education	Yes	Yes	No	Maybe	No	No	Yes	No	Maybe	Yes
Erosion and sediment control enforcement	Maybe	No	Yes	No	Yes	No	Yes	No	No	No

# Stream Restoration Map

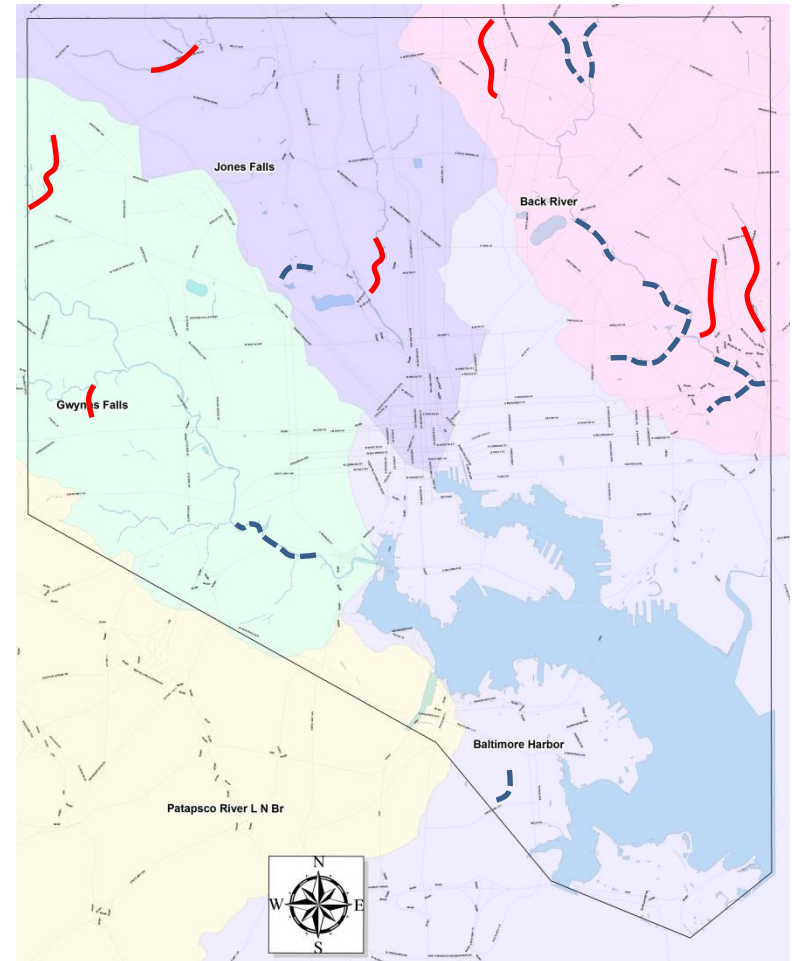


## CIP Projects

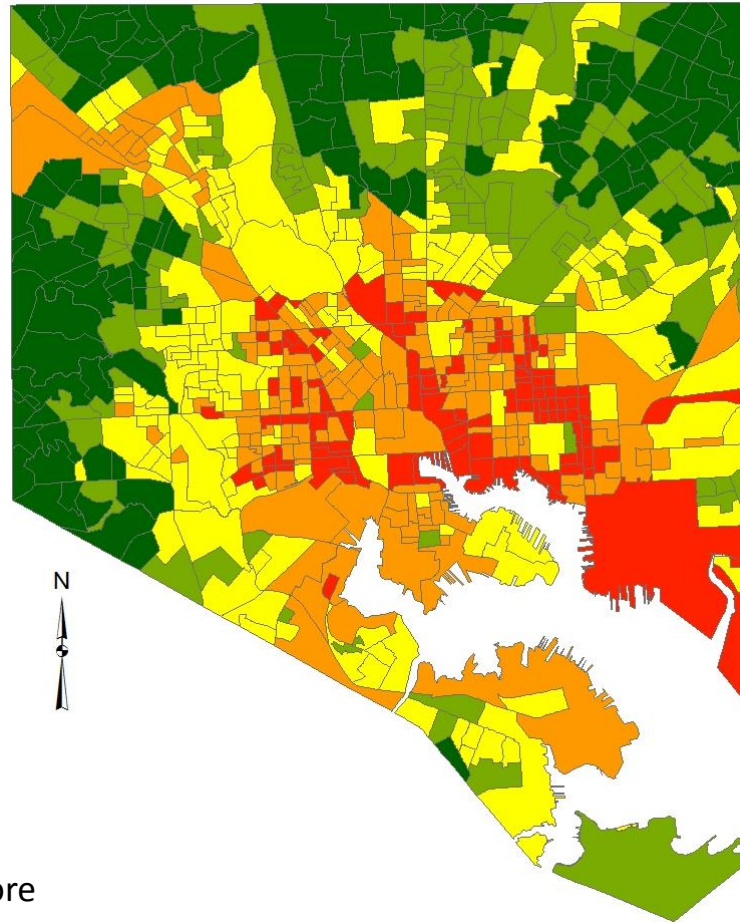
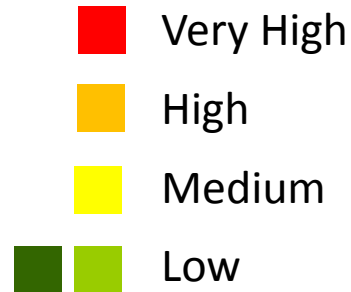
Biddison Run  
Lower Moore's Run  
Chinquapin Run  
Powder Mill Run  
Stony Run  
Franklinton Culvert  
Western Run



## Projects identified in SWAPs, Assessments, etc



# Tree Planting Priority Areas

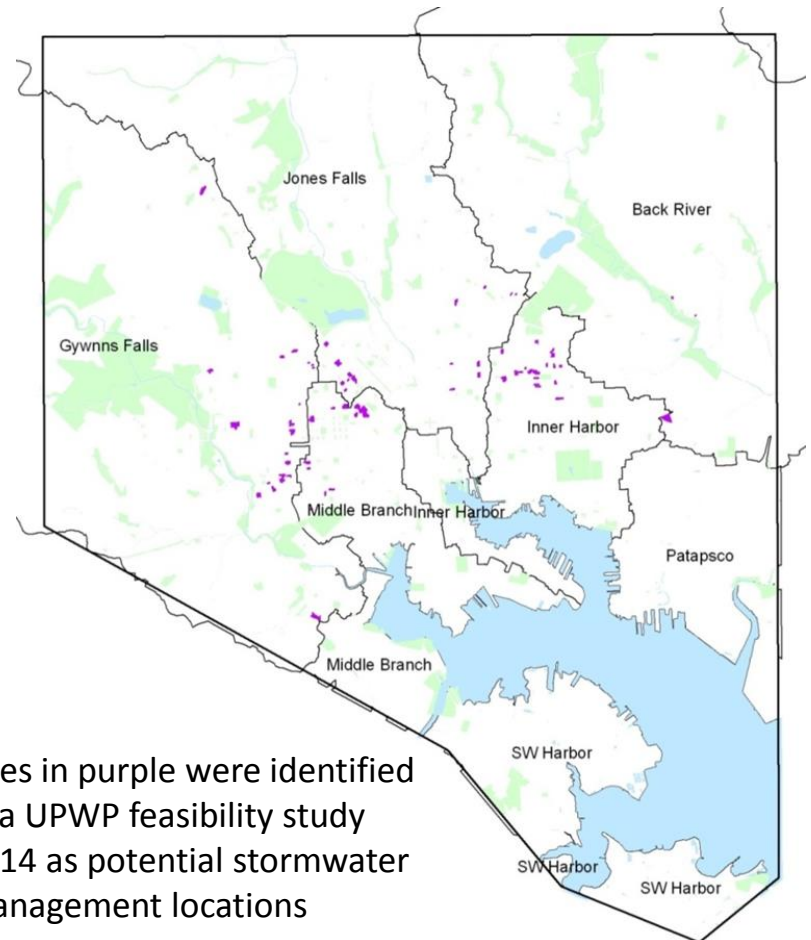
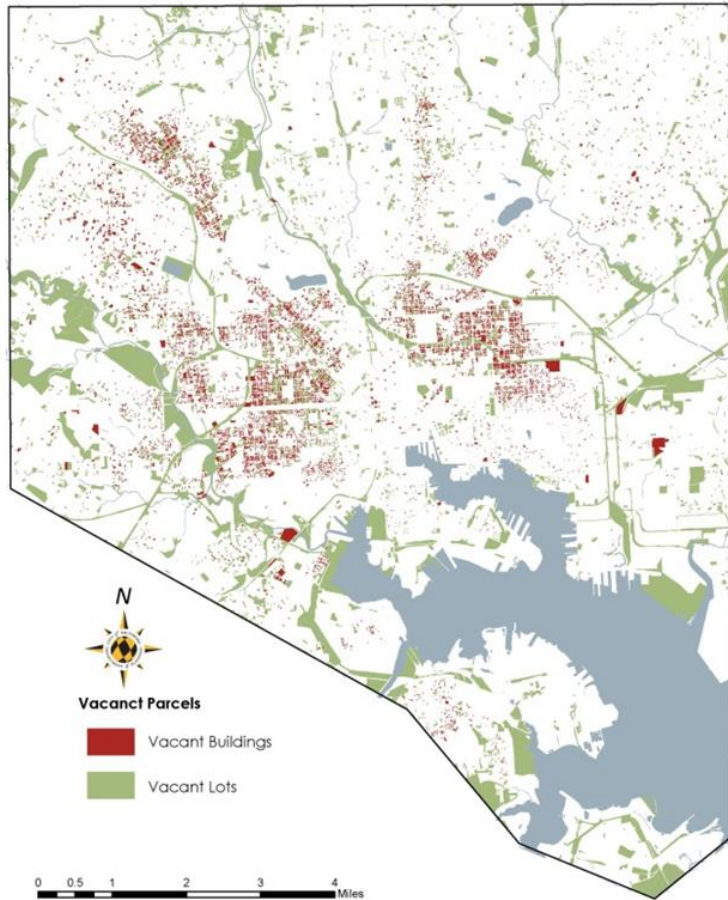


Based on:

- Percentage of impervious
- Heat Island index
- Existing tree canopy

\*Information provided by TreeBaltimore

# Vacant Lots / Stormwater



Sites in purple were identified in a UPWP feasibility study 2014 as potential stormwater management locations

# Projects

Description	# Projects	Imp. Area
<b>Stream Restoration (CIP)</b>	11	1,907*
Biddison Run		
Lower Moore's Run		
Chinquapin Run		
Powder Mill Run*		
Stony Run		
Western Run		
<b>TBD Stream Restoration</b>	15	933*
Lower Gwynns Falls, Druid Hill Park stream, Herring Run (several locations), Armistead Run (potentially 22,000 LF = 4 miles)		
<b>Street Tree Planting / Reforestation</b>	Various	150 acres
Street trees		60 acres
Trees planted at schools + parks		90 acres

## Notes:

1. "Projects" means that they are either located on public land and right-of-ways or installed by DPW.
2. DPW is in conversation with MDE to determine amount of equivalent impervious area credit for stream restoration.
3. Projects may include a "bundle" of BMPs at multiple locations; ie one project might be 5 different micro-bioretenion facilities.



# Projects

Descriptions	# Projects	Imp. Area
<b>Traditional BMPs</b>	3	150 acres
Retrofitting existing stormwater ponds Gwynns Run, Seton Business Park, and other	3	150 acres
Installing new ponds, bioretention, and structural filtration practices 49 potential locations identified (594 acres)	5	250 acres
<b>ESD Practices</b>		
Installing micro-practices + green roofs 23 potential projects identified	11	55 acres
Creating new green spaces from previously vacant lots and schools Year 1 – 5 school renovations Growing Green Design Competition / Growing Green Initiative	12	30 acres

## Notes:

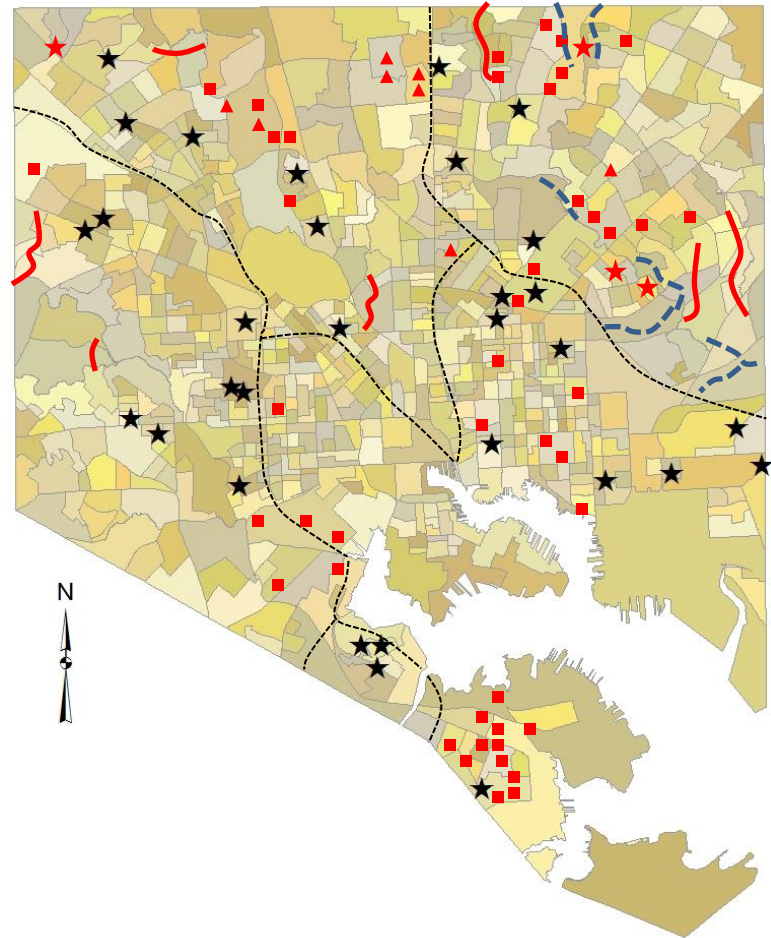
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# Green Infrastructure

## Potential Projects

- ★ Year 1 – 5 Schools
- ★ Other Schools
- BMPs / ESD Projects: Public
- ▲ BMPs / ESD: Private
- ~ Stream Restoration: CIP
- ~ Stream Restoration: SWAPs
- - - Watershed Boundaries



# Programs

Description	Imp. Area
Expanded City-wide mechanical street sweeping*	440 acres
Preventive cleaning of catch basins and debris collectors	45 acres
Illicit Discharge Detection and Elimination (IDDE) program	250 acres*
Erosion and sediment control enforcement	50 acres*
Public Education	20 acres*

## Notes:

1. Programs are considered Alternative BMPs; DPW will use equivalent acres treated calculations as approved by the Maryland Department of the Environment (MDE)
2. DPW is in conversation with MDE to determine amount of equivalent impervious area credit for programs with an asterisk



# Trash Reduction Programs

## Storm Drain Inlet Screens

▲ Phase 1: McElderry Park / Carrollton Ridge

○ Phase 2: Adjoining neighborhoods

## Municipal Trash Container Pilot

Belair-Edison / Four by Four, Mondawmin area  
(Mondawmin, Panway-Braddish, Liberty Square, Burleigh-Leighton, Parkview-Woodbrook)

## Mechanical Alley Sweeping

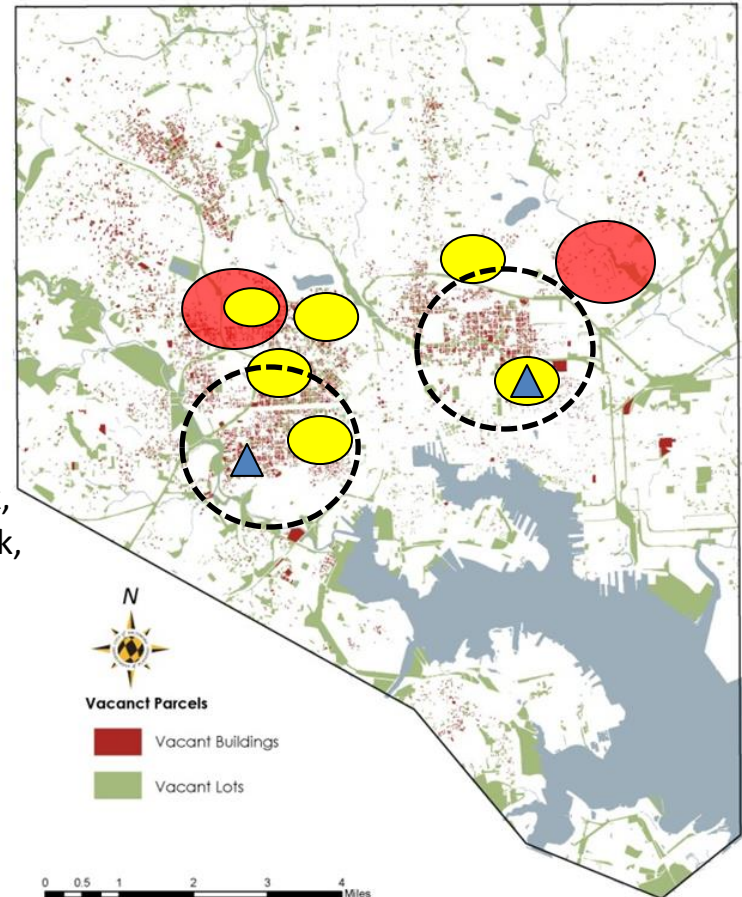
Belair-Edison, CHM, Panway-Braddish, Reservoir Hill, Washington Village/Pigtown, McElderry Park/Elwood Park, Sandtown-Winchester, Mondawmin/Parkview/Woodbrook, Hollins Market

First 4 months of expanded street sweeping (April – July):

- 1,195 tons of trash collected

This equates to the following reductions in pollutant loads:

- 4,182.5 lbs of nitrogen (2.09 tons)
- 1,673.0 lbs of phosphorus (0.83 tons)
- 501,900.0 lbs sediment (250.95 tons)



# Water Monitoring Program


[www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org)





Stephanie Rawlings-Blake, Mayor  
 Rudolph S. Chow, P.E., Director  
 Kumasi Vines, Acting Bureau Head

WATER
STORMWATER
WASTEWATER
CAPITAL PROJECTS
CUSTOMER SUPPORT
BALTIMETER

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## Water Quality Sampling Program

Stream Impact Sampling and Ammonia Screening

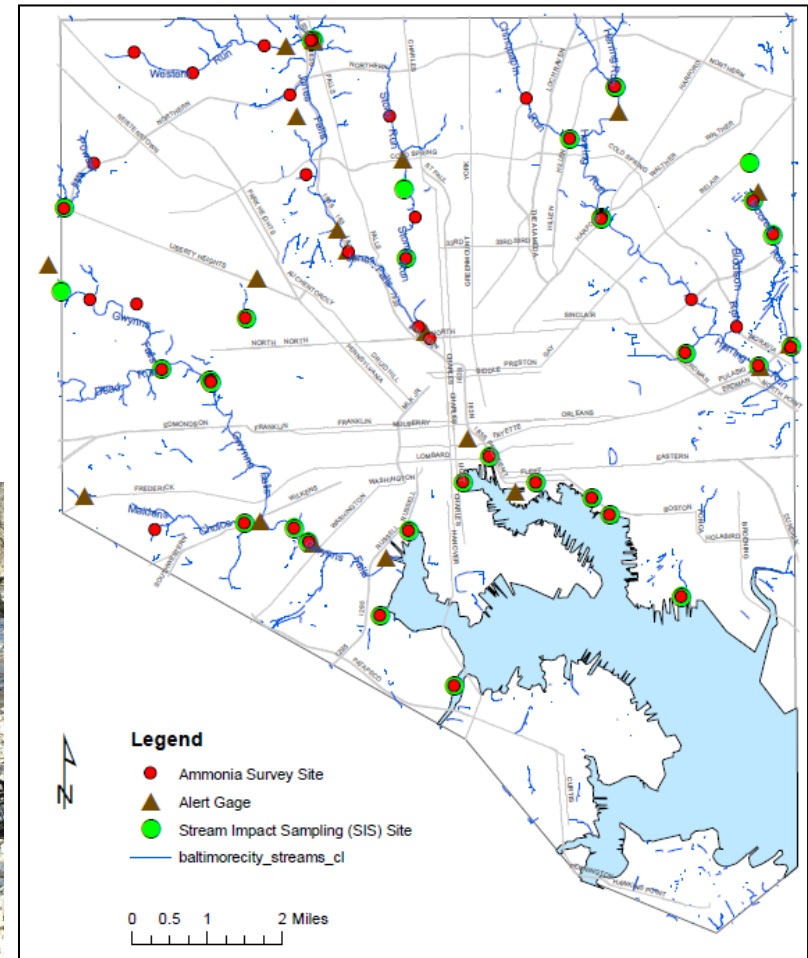
	date	time	station	parameter	result	unit	stationLoc
1	06/12/2014	11:03:00	PULASKI HWY.	Hach_Ammonia_Nitrogen	0.45	mg/L	(39.30539
2	06/12/2014	11:25:00	BR @ MORAVIA RD.	pH	7.5	pH Units	(39.31273
3	06/12/2014	11:25:00	BR @ MORAVIA RD.	Water temperature	20.92	Degree Celsius	(39.31273
4	06/12/2014	11:56:00	HARFORD RD.	Dissolved Oxygen	9.279999999999994	mg/L	(39.33377
5	06/12/2014	9:46:00	MT. PLEASANT GC	Chlorine_Spec			
6	06/12/2014	10:08:00	RADECKE AVE.	Chlorine_Spec			
7	06/12/2014	12:10:00	CHINQUAPIN RUN	Water temperature			
8	06/12/2014	10:40:00	SINCLAIR LN	Dissolved Oxygen			



47 ammonia screening locations  
(weekly) = IDDE (Illicit Discharge  
Detection and Elimination)

33 stream impact sampling locations  
(monthly)= trends

The sampling program is now available  
online!



# Staffing

Program	Current (Filled and vacant)	Future Increase
Plan Review & Inspections	13	8-10
Water Quality Monitoring & IDDE	14	5-8
Project Implementation (Eng. & Const.)	13	20-30
Education & Outreach	1	2-6

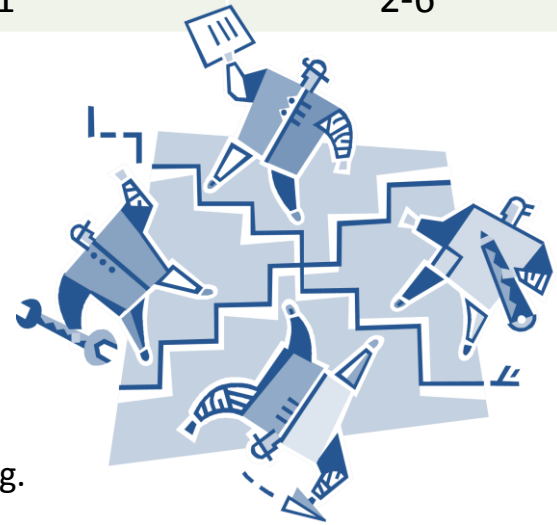
## Maintenance Staffing

Structural / Traditional: 1 crew\* / 10 facilities

ESD Practices: 1 crew\* / 20 ac restored

Inlet Cleaning: 1 crew\* / 200 inlets

*\* crew = 3 people*



**Note:** Future maintenance may also include leaf retrieval and composting.

# Partnerships

Description	Imp. Area
<b>Development Requirements</b>	<b>180 acres</b>
Combination of micro-bioretentation, impervious removal, green roofs  (2013 = 15.5 ac ESD / BMP + 53.0 ac impervious removal)	
<b>Voluntary Practices &amp; SWM Credit Practices</b>	<b>215 acres</b>
Partner Organizations: BWB, P&P, Baltimore Tree Trust, others	
SW Credits: Residential	
SW Credits: Non-residential	
<b>Note:</b> Partnerships represent projects that are installed on private property and/or in partnership with private and non-profit partners.	

# Projects / Programs by Watershed

<b>Gwynns Falls</b>	<b>Jones Falls</b>	<b>Back River</b>	<b>Direct Harbor</b>	<b>N. Patapsco</b>
Stream Restoration	Stream Restoration	Stream Restoration		
Retrofits & Micro-practices	Micro-practices	New BMPs	Micro-practices	
Schools	Schools	Schools	Schools	Schools
Vacant lots	Vacant Lots		Vacant Lots	
Tree Planting	Tree Planting	Tree Planting	Tree Planting	Tree Planting
IDDE	IDDE	IDDE	IDDE	IDDE
Inlet Screens & Trash Interceptors	Inlet Screens & Trash Interceptors	Trash Interceptors	Inlet Screens & Trash Interceptors	Inlet Screens
Street Sweeping & Inlet Cleaning	Street Sweeping & Inlet Cleaning	Street Sweeping & Inlet Cleaning	Street Sweeping & Inlet Cleaning	Street Sweeping & Inlet Cleaning



**Baltimore City Department of Public Works**



# Projected Costs / Funding (Projects)

	Cost		Funding Sources
Stream Restoration	\$70,802,000	53%	Stormwater Utility Fund (SMU) Other (Red Line)
Installing new ponds, bioretention, and structural filtration practices	\$12,646,000	28%	Stormwater Utility Fund CIP (other agencies)
Installing micro-practices + green roofs	\$13,292,000		Stormwater Utility Fund CIP (other agencies)
Creating new green spaces from previously vacant lots	\$4,000,000		Stormwater Utility Fund Growing Green Initiative / Grants
Impervious removal and greening	\$7,161,000		Stormwater Utility Fund CIP (other agencies) / Grants
Tree planting / reforestation	\$12,000,000	9%	TreeBaltimore Stormwater Utility Fund / Grants
Inlet Screens and Catch Basins	\$1,223,000	10%	Stormwater Utility Fund
Harbor Debris Collectors	\$12,374,000		Stormwater Utility Fund Maryland Port Administration
Partnerships (NGOs)	TBD		Grants Grants / Rebates (SMU)

**\$133,498,000**

**Note:** Costs are based on CIP FY2015-2018 and do not include maintenance



**Baltimore City Department of Public Works**



# Restoration Plan Outline

- Background
  - City Description
  - Summary of TMDLs
  - Watershed Assessments
  - Previous restoration
  - Other regulatory factors
  - Other environmental initiatives
  - Development of plan methodology
- Description of projects and programs
  - Summary
  - Proposed projects
  - Proposed programs
  - Education elements
  - Maintenance
- Milestones
  - Tracking mechanisms
  - Program milestone
  - Project milestones
- Adaptive management
  - Annual report and procedure for changes
  - Evaluation
- Financial Strategy

**FINAL DRAFT:  
OCT. 2014  
PUBLIC COMMENT:  
NOV. 2014**

# Next Steps

## Introduction

June 16, 6 to 7:30  
Southeast Anchor Library  
3601 Eastern Ave.

## Initial Goals

July 16, 6 to 7:30  
Reisterstown Road Library  
6310 Reisterstown Rd

## Project Prioritization / Funding

August 7, 6 to 7:30  
Orleans St. Library  
1303 Orleans St.

## Maintenance / Contingency

Sept. 8 , 6 to 7:30  
Southeast Anchor Library  
3601 Eastern Ave.

**NEXT MEETING**

At the September meeting the presentation and discussion  
will focus on maintenance and contingency plans / adaptive management



**Baltimore City Department of Public Works**



# Can't Make a Monthly Meeting??

- Website
  - Power point presentations
  - Meeting “minutes”
  - Preliminary maps and plans
- Facebook
- E-mail [publicworks@baltimorecity.gov](mailto:publicworks@baltimorecity.gov), re: MS4 Plan
- Phone: 410-396-0732



New Look  
More Info

**cleanwater**baltimore  
[www.cleanwaterbaltimore.org](http://www.cleanwaterbaltimore.org)

# Thank You for Your Time.

**Mr. Mark Cameron**

**Mark.cameron@baltimorecity.gov**

**410-396-0732**

**Bureau of Water and Wastewater, DPW**

**publicworks@baltimorecity.gov**



**Baltimore City Department of Public Works**

